

## ABSTRACT OF THE DISCLOSURE

A linear predictive system for a DC-DC converter including a linear predictive controller, first and second adders and a multiplier. The DC-DC converter generates an output signal and includes a digital compensation block that converts a feedback error signal into a main duty cycle signal. The linear predictive controller predicts linear changes of the main duty cycle signal in response to changes of the output signal and provides a predictive duty cycle signal. The first adder subtracts the predictive duty cycle signal from the main duty cycle signal to provide a duty cycle delta. The multiplier multiplies the duty cycle delta by a gain factor to provide a duty cycle delta sample. The second adder adds the duty cycle delta sample to the first duty cycle signal to generate an adjusted duty cycle signal. The linear predictive controller performs an inverse function of DC-DC conversion approximated to the first order